

Road Safety Audit - Peer Review

**Proposed Vehicle Access
at
626 Heidelberg Road, Alphington**

**Prepared For
Yarra City Council**

Road Safety Audit - Peer Review

626 Heidelberg Road, Alphington: Proposed Vehicle Access

Road Safety Audit Peer Review

Proposed Vehicle Access

at

626 Heidelberg Road, Alphington

Document Control

Issue No.	Type	Date	Prepared By	Approved By
A	Report	5/03/2019	B. Hodges	W. de Waard

Our Reference: G24706R-04A

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1 Introduction

Traffix Group Pty Ltd has been engaged by Yarra City Council to conduct a Peer Review of a previous Road Safety Audit prepared for the proposed vehicle access to 626 Heidelberg Road, Alphington.

The following report reviews the findings of the previous Road Safety Audit and the responses provided by the project manager.

2 Previous Road Safety Audit

RSA Pty Ltd were engaged by GTA Consultants to prepare a Functional Design Stage Road Safety Audit of the proposed Heidelberg Road access to 626 Heidelberg Road, Alphington. The RSA Pty Ltd Reference Number is RSA-05937.

The proposal is for the construction of a left in / left out access point to Heidelberg Road, including a left turn deceleration lane. Internally, the proposed accessway splits into two (2) sections, one for vehicles to access a ramp to the internal carparking areas and one for trucks to the internal loading areas.

A shared path is provided along the Heidelberg Road frontage, with a raised crossing provided over the proposed access point.

A copy of the plan subject to the previous Road Safety Audit is provided in Figure 1 below.

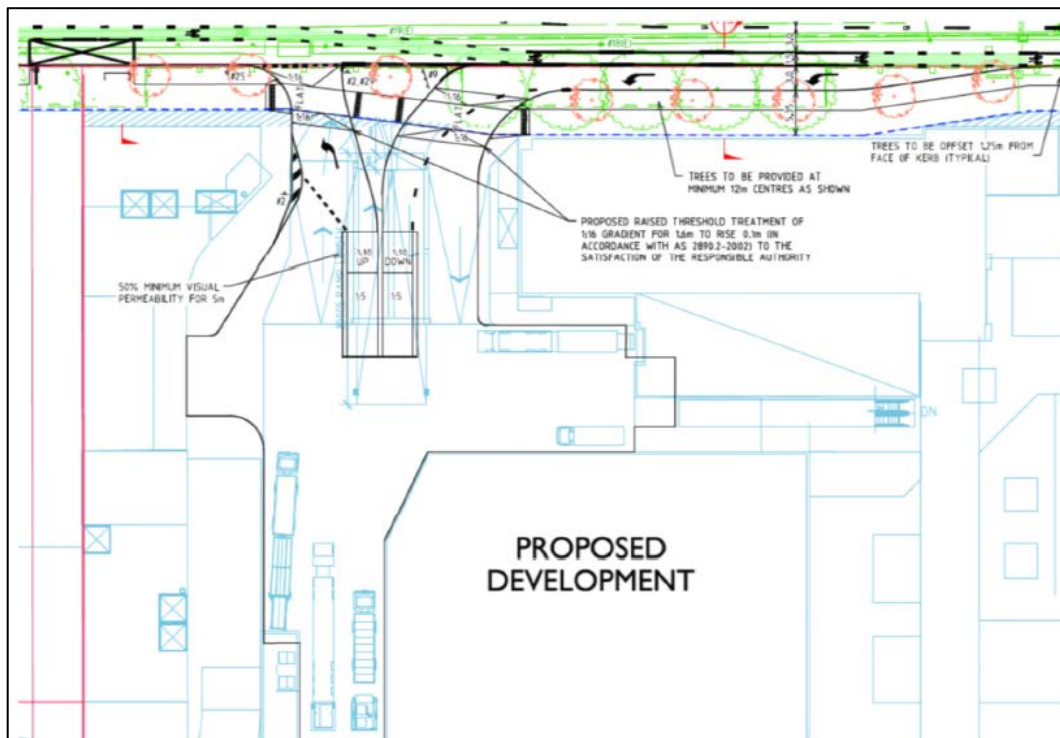


Figure 1: Proposed Access Arrangements

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3 Scope of RSA Peer Review

Traffix Group has been engaged by Yarra City Council to undertake a peer review of the previous Road Safety Audit prepared for 626 Heidelberg Road, Alphington. The scope of our engagement includes the following:

- Review and commentary on the issues, ranking and suggested improvements identified in the previous Road Safety Audit,
- Review and commentary on the responses provided to the Road Safety report by GTA Consultants, and
- Identification of any additional safety items associated with the audited design.

Road Safety Audits are undertaken in accordance with the AustRoads Guide to Road Safety: Part 6A (2019). Specifically, we note that Road Safety Audits are undertaken on an exceptions basis, where only items that are considered safety issues are identified. We note that the auditors associated with the previous Road Safety Audit may have contemplated a number of matters that were ultimately not deemed safety issues (as hence were not detailed in the Road Safety Audit report). On this basis, we are not aware of the full considerations of the previous Road Safety Audit and can only comment on the safety issues reported.

Furthermore, the previous Road Safety Audit report notes the following:

‘A Road Safety Audit is fundamentally a subject qualitative process highly influenced by the experience and views of the individual team members’

We agree with this view and note that different teams can form different views regarding the same project.

The peer review of the previous Road Safety Audit was carried out by:

- Brent Hodges, B.E. (Civil) Hons.
Associate, Traffix Group Pty Ltd (Senior Road Safety Auditor)
- Will de Waard, B.E. (Civil) Hons., M.I.E.Aust., M.V.P.E.L.A.
Director, Traffix Group Pty Ltd (Senior Road Safety Auditor)

The site inspections were undertaken as described in Table 1 below.

Table 1: Site Inspection Details

Activity	Day Inspection
Day	Friday
Date	1 st March 2019
Time	6:45am – 7:30pm
Auditor/s	B. Hodges

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Activity	Day Inspection
Weather Conditions (Clear, Raining, Snowing, Fog, Dust, Smoke, Unknown or Not Applicable)	Clear
Light Conditions (Light, Dark Dusk Dawn, Light and Dark, Unknown or Not Applicable)	Light
Road Surface Conditions (Dry, Wet, Muddy, Snowy, Icy, Unknown or Not Applicable)	Dry

4 Site Details

4.1 Road Network

Heidelberg Road is an arterial road that extends between Queens Parade, Clifton Hill in the west to Lower Heidelberg Road / Upper Heidelberg Road, Ivanhoe in the east. In the vicinity of the subject site, Heidelberg Road Provides for a single carriageway with two lanes in each direction. Parking is not allowed on either side of Heidelberg Road. An on-road bicycle lane is provided on both sides of the road.

A posted speed limit of 60km/h applies to Heidelberg Road in the vicinity of the subject site.

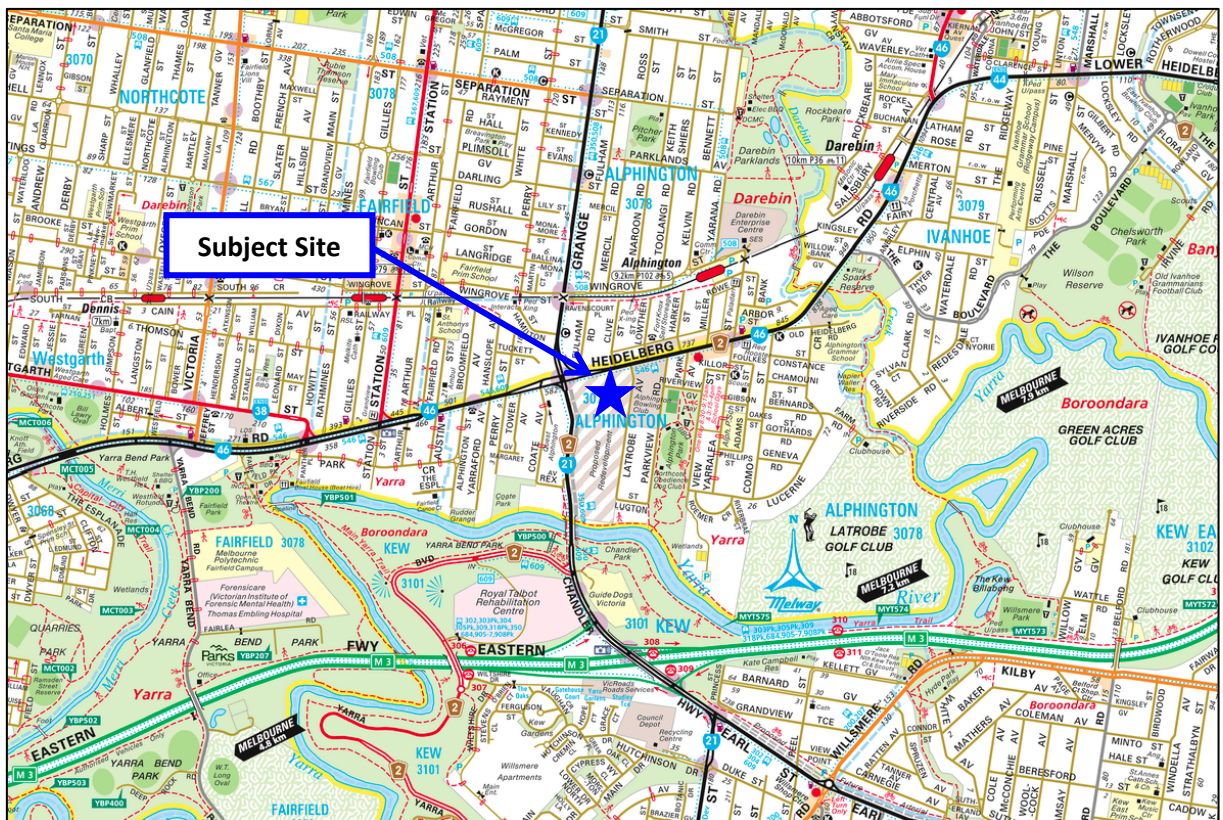
Chandler Highway is an arterial road that extends between Heidelberg Road in the north and Earl Street in the south. In the vicinity of the subject site, Chandler Highway is currently being redeveloped to provide for a dual carriageway.

A temporary posted speed limit of 40km/h applies to Chandler Highway in the vicinity of the subject site associated with roadworks.

A locality plan and aerial photograph illustrating the site location is presented at Figure 1 and Figure 3, while photographs of the existing conditions are provided at Appendix A.

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Figure 2: Locality Plan



Source: Nearmap

Figure 3: Aerial Photograph

5 Review of RSA Report Findings

Table 2 reviews the safety issues identified in the previous Road Safety Audit report along with the suggested improvements and 'status' of each issue.

The final columns in the table provides our commentary / review of each item and provides a agree/partial/disagree summary. Our commentary is provided in 'blue'.

6 Review of Project Manager Response to RSA Findings

Table 3 reviews the responses provided by the project manager (GTA Consultants) to the audit findings from the previous Road Safety Audit report. Our commentary is provided in 'blue'.

7 Additional Safety Issues Identified

In accordance with the general principles of a Road Safety Audit, we have separately reviewed the proposed layout plans with a view to identifying any additional safety issues that were not identified by the previous RSA report.

We have formed the view that there are no additional safety issues that were not identified by the previous Road Safety Audit report.

8 Summary

We have undertaken a peer review of the previous Road Safety Audit prepared by Road Safety Audits Pty Ltd for the proposed vehicle access at 626 Heidelberg Road, Alphington. The audit peer review has completed the following:

- Reviewed the safety issues, suggestions and status identified in the previous Road Safety Audit,
- Reviewed the project managers response to the previous Road Safety Audit, and
- Considered any additional safety items not identified in the previous Road Safety Audit,

Our key recommendations for consideration by Council are as follows:

- The issue of shared path priority is still unresolved. We are of the view that this issue has a 'high' risk rating and the shared path priority should be clear to drivers, riders and pedestrians.
- A number of changes to the design are proposed in the GTA Consultants Road Safety Audit response, however, these haven't been included on the plans provided. Amended plans should be sought from the proponent showing their proposed modifications including:
 - Signage, linemarking and pavement changes to highlight the vehicle / truck travel paths,
 - Gates across the truck access point to further delineate travel paths,
 - Realignment of the warning TGSIs on the shared path crossing,
 - An energy absorbing bollard in front of the basement ramp wall

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Name	Signature	Date
Brent Hodges Senior Road Safety Auditor		5/03/2019
Will de Waard Senior Road Safety Auditor		5/03/2019

Reference Documents Used During the Audit:

- Australian Standard AS 1742.2-2009, Manual of Uniform Traffic Control Devices Part 2, Traffic Control Devices for General Use, March 2009.
- AustRoads, Guide to Road Design, Part 3: Geometric Design, September 2016.
- AustRoads, Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, June 2017.
- AustRoads, Guide to Road Safety, Part 6A: Implementing Road Safety Audit, February 2019.

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Table 2: Review of Previous RSA Report Issues / Suggestions / Status

Road Safety Audits Pty – Identified Safety Issues		Traffix Group Review	
		Agree/ Disagree	Comments
1	<p><u>Issue:</u> Navigation</p> <p><i>'It is understood that the loading area will be distinguished from the car park access road with signs and line-marking. If drivers may be confused here there is potential for sudden stops and rear-end crashes. The Westfield Doncaster example shown in Figure 3 could be easily misunderstood due for faded pavement markings and gantry signage for the carpark only.'</i></p>	Agree	If the car and truck access points are not clearly signed there is potential for rear end crashes as drivers make last minute decisions.
	<p><u>Suggestion:</u></p> <p><i>'Ensure the loading bay area is clearly distinguished from the road – preferably by a different colour paving.'</i></p>	Agree	Agree that the loading bay should be clearly distinguished from the carpark access. However, there are multiple signage, linemarking or pavement options that could be applied (it doesn't necessarily have to be limited to a different coloured paving).
	<p><u>Status:</u> 'Important'</p>	Agree	<p>Road Safety Audits provide a 'basic' ranking system whereby items are classified as Urgent / Important / Minor.</p> <p>Traffix Group adopts a different ranking system that applies numerical ratings to likelihood and severity to generate classifications of Low, Medium, High and Intolerable. Our ranking for this item is as follows:</p> <p><u>Probability:</u> Probable</p> <p><u>Severity:</u> Limited</p> <p><u>Risk Rating:</u> Medium</p> <p>We are of the view that our ranking is generally similar to the RSA ranking provided.</p>

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Road Safety Audits Pty – Identified Safety Issues		Traffix Group Review	
		Agree/ Disagree	Comments
2	<p><u>Issue:</u> Cyclists</p> <p><i>'With the level shared path threshold treatments, a concern is raised about the potential for cyclists on the shared path to approach at speeds higher than drivers expect or can easily give way to.</i></p> <p><i>Note: Based on Victorian Road Rules, SUP users have the right of way over entering vehicles (side road or driveway), and sometimes over exiting vehicles (driveway but not side road).'</i></p>	Agree	The proposed plans do not clearly highlight the priority at the raised shared path crossing point. This could lead to confusion between riders, pedestrians and drivers to who has right of way.
	<p><u>Suggestion:</u></p> <ul style="list-style-type: none"> • <i>'Check sight distance (including ensuring trees chosen will not be bushy below 2m).</i> • <i>Investigate measures to slow cyclists and to alert them.</i> • <i>As the Road Rules are not well understood on this point, consider actively providing priority to SUP users with signs and markings.'</i> 	Agree	<p>The plans should clearly show who has priority at the shared path crossing (bicycles / pedestrians or vehicles).</p> <p>The selection of appropriate vegetation around the crossing is also critical to maintain sight lines.</p>
	<p><u>Status:</u> 'Important'</p>	Partial	<p>Our ranking for this item is as follows:</p> <p><u>Probability:</u> Occasional</p> <p><u>Severity:</u> Serious</p> <p><u>Risk Rating:</u> High</p> <p>We are of the view that our ranking is generally indicating that the issue should be given greater weighting than the 'important' status applied by the previous RSA.</p>

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Road Safety Audits Pty – Identified Safety Issues		Traffix Group Review	
		Agree/ Disagree	Comments
3	<u>Issue:</u> TGSIs '1. Some of the TGSIs are shown perpendicular to approach paths rather than crossing alignment (red circles). 2. TGSIs can be skidding hazards for cyclists. 3. Some projects get constructed with white TGSIs on light grey paths.'	Agree	The warning TGSIs should align with the path of travel. The currently arrangement would direct vision impaired pedestrians onto the ramp associated with the raised crossing.
	<u>Suggestion:</u> <ul style="list-style-type: none"> • 'Realign these TGSIs. • Specify TGSIs with similar friction characteristics to the surrounding path. • Ensure good contrast is provided.' 	Agree	The TGSIs should be updated to reflect the relevant Australian Standard.
	<u>Status:</u> No ranking provided	-	The previous Road Safety Audit doesn't provide a risk ranking for this item. Our ranking for this item is as follows: <u>Probability:</u> Improbable <u>Severity:</u> Minor <u>Risk Rating:</u> Low

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Road Safety Audits Pty – Identified Safety Issues		Traffix Group Review	
		Agree/ Disagree	Comments
	<u>Issue:</u> Wall Hazard <i>If a wall is present between entering trucks and cars, it would be a roadside hazard (although speeds will be low).</i>	Agree	Whilst it is agreed that the wall does present a blunt end adjacent to the possible travel paths, the vehicle speeds within the site would be expected to be very low (i.e. carpark speeds).
	<u>Suggestion:</u> <i>Consider incorporating a shock absorbing bollard as shown.</i>	Agree	An energy absorbing bollard would address the issue of the wall hazard. Furthermore, improved delineation as described in Item 1 would assist with alignment of vehicles into the carpark access.
4	<u>Status:</u> No ranking provided	-	<p>The previous Road Safety Audit doesn't provide a risk ranking for this item. Our ranking for this item is as follows:</p> <p><u>Probability:</u> Improbable</p> <p><u>Severity:</u> Minor</p> <p><u>Risk Rating:</u> Low</p> <p>Whilst no ranking has been provided, we are of the view that this item has a low risk rating.</p>

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Road Safety Audits Pty – Identified Safety Issues		Traffix Group Review	
		Agree/ Disagree	Comments
5	<u>Issue:</u> Sight Lines Between Vehicles Approaching Heidelberg Road <i>The wall between trucks and cars will obstruct sightlines between drivers of vehicles with conflicting movements. While a give way line is shown, truck drivers can only give way if they can see the vehicles they have to give way to.</i>	Agree	Whilst the plans do reference 50% visual permeability, it is agreed that further detail regarding the wall openings should be provided at future design stages.
	<u>Suggestion:</u> <i>50% visual permeability is specified. Ensure this visual permeability is relevant to the angles of viewing required.</i>	Agree	The plans already specify 50% visual permeability.
	<u>Status:</u> No ranking provided	Partial	The previous Road Safety Audit doesn't provide a risk ranking for this item. Our ranking for this item is as follows: <u>Probability:</u> Occasional <u>Severity:</u> Minor <u>Risk Rating:</u> Medium Given the medium ranking, this item should be given the appropriate weighting.
6	<u>Issue:</u> Swept Paths <i>'Swept path diagrams were not provided.'</i>	Partial	Swept paths were provided in the updated GTA Consultants Traffic Impact Assessment. These swept paths show that the loading area is adequately sized to cater for the design vehicles. We would not expect any significant safety issues associated with the swept paths.
	<u>Suggestion:</u> <i>'Ensure swept path checks are undertaken for all expected vehicles.'</i>	Partial	
	<u>Status:</u> No ranking provided	Agree	No specific safety issue has been identified and therefore it is appropriate to not provide a risk ranking.

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Table 3: Review of Project Manager Response to RSA Findings

RSA Issue	Project Manager Response (GTA Consultants)		Traffix Group Review
	Accept / Reject	Comments / Status	
<p>1 <u>Issue: Navigation</u></p> <p><i>'It is understood that the loading area will be distinguished from the car park access road with signs and line-marking. Drivers may be confused here there is potential for sudden stops and rear-end crashes.</i></p> <p><i>The Westfield Doncaster example shown in Figure 3 could be easily misunderstood due for faded pavement markings and gantry signage for the carpark only.'</i></p> <p><u>Suggestion:</u></p> <p><i>'Ensure the loading bay area is clearly distinguished from the road – preferably by a different colour paving.'</i></p>	Accept	<p><i>It is expected that different coloured paving will be provided to differentiate the public car park to the loading area.</i></p> <p><i>It should be noted that the public ramp has been sufficiently set back from Heidelberg Road to allow motorists time to enter the car park.</i></p> <p><i>Additionally, signage will clearly identify the entrance to the car park, with the loading area to be gated (both entry and exit) for loading vehicles only.</i></p>	<p>The proposed actions address the proposed safety concerns, in particular the usage of gates for the entry and exit of the loading area will clearly define the access path for general vehicles.</p> <p>However, the architectural plans submitted to Council do not show any of the detail proposed to address this item (signs, pavement treatment, linemarking or gates).</p> <p>Recommendation: Seek plans from the proponent showing the suggested improvements.</p>
<p>2 <u>Issue: Cyclists</u></p> <p><i>'With the level shared path threshold treatments, a concern is raised about the potential for cyclists on the shared path to approach at speeds higher than drivers expect or can easily give way to.</i></p> <p><i>Note: Based on Victorian Road Rules, SUP users have the right of way over entering vehicles (side road or driveway), and sometimes over exiting vehicles (driveway but not side road).'</i></p> <p><u>Suggestion:</u></p> <ul style="list-style-type: none"> <i>'Check sight distance (including ensuring trees chosen will not be bushy below 2m).</i> <i>Investigate measures to slow cyclists and to alert them.</i> <i>As the Road Rules are not well understood on this point, consider actively providing priority to SUP users with signs and markings.'</i> 	Reject	<p><i>Along the site frontage on Heidelberg Road, both an on-road bicycle lane and a shared path are proposed to be provided in accordance with the Development Plan for the overall site.</i></p> <p><i>As such, it is expected that competent cyclists (travelling at speed) will chose to utilise the on-road bicycle lane, with less experienced users expected to utilise the shared path at slower speeds.</i></p> <p><i>Notwithstanding the above, the canopy of the street trees are proposed to be greater than 2m to aid sight distance for motorists.</i></p>	<p>The response addresses the sight lines issues associated with the proposed landscaping, with trees with a higher canopy than 2m to be utilised.</p> <p>However, the response does not address the issue of shared path priority. The discussion simply indicates that less experienced riders would be using the path. We are of the view that it is therefore even more important that the priority is clear to drivers and riders.</p> <p>Recommendation: Ask the proponent to clearly define the shared path priority.</p>

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RSA Issue	Project Manager Response (GTA Consultants)		Traffix Group Review
	Accept / Reject	Comments / Status	
<p>3 <u>Issue:</u> TGSIs</p> <p>'1. Some of the TGSIs are shown perpendicular to approach paths rather than crossing alignment (red circles).</p> <p>2. TGSIs can be skidding hazards for cyclists.</p> <p>3. Some projects get constructed with white TGSIs on light grey paths.'</p> <p><u>Suggestion:</u></p> <ul style="list-style-type: none"> • 'Realign these TGSIs. • Specify TGSIs with similar friction characteristics to the surrounding path. • Ensure good contrast is provided.' 	Accept	The functional layout plan can be updated to include a realignment of the TGSI's.	<p>The project manager has accepted the suggestion to realign the pram ramps. However, both the architectural plans and functional layout provided in the GTA report do not show the pram ramps being realigned.</p> <p>Recommendation: Seek plans from the proponent showing the suggested improvements.</p>
<p>4 <u>Issue:</u> Wall Hazard</p> <p>If a wall is present between entering trucks and cars, it would be a roadside hazard (although speeds will be low).</p> <p><u>Suggestion:</u></p> <p>Consider incorporating a shock absorbing bollard as shown.</p>	Accept	The functional layout plan can be updated to include a bollard as suggested.	<p>The project manager has accepted the suggestion to include a bollard in front of the wall. However, bot the architectural plans and functional layout provided in the GTA report do not show the bollard included.</p> <p>Recommendation: Seek plans from the proponent showing the suggested improvements.</p>

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RSA Issue	Project Manager Response (GTA Consultants)		Traffix Group Review
	Accept / Reject	Comments / Status	
<p>5 <u>Issue:</u> Sight Lines Between Vehicles Approaching Heidelberg Road</p> <p>The wall between trucks and cars will obstruct sightlines between drivers of vehicles with conflicting movements. While a give way line is shown, truck drivers can only give way if they can see the vehicles they have to give way to.</p> <p><u>Suggestion:</u></p> <p>50% visual permeability is specified. Ensure this visual permeability is relevant to the angles of viewing required.</p>	Accept	The wall between trucks and cars will be 50% permeable for exiting cars/trucks at this location.	<p>The plans provided as part of the previous RSA included text for the wall to be 50% clear of visual obstructions. This action would address the identified safety issue.</p> <p>The plans provided as part of the planning permit submission do not show this note. It is important that this design detail is not lost at the detailed design stage.</p> <p>Recommendation: Ensure that the note for 50% permeability is provided</p>
<p>6 <u>Issue:</u> Swept Paths</p> <p>'Swept path diagrams were not provided.'</p> <p><u>Suggestion:</u></p> <p>'Ensure swept path checks are undertaken for all expected vehicles.'</p>	Accept	Swept paths for all relevant design vehicles have been undertaken	<p>The GTA Consultants Traffic Impact Assessment report included swept path diagrams for trucks accessing the loading area.</p>

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Appendix A: Photographs

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Photograph 1:

**Heidelberg Road –
East of Chandler
Highway**

View to West



Photograph 2:

**Heidelberg Road –
Existing Bus Stop**

View to West



Photograph 3:

**Heidelberg Road –
East of Chandler
Highway**

View to West



Photograph 4:

**Heidelberg Road
opposite Clive Street**

View to West

Road Safety Audit - Peer Review

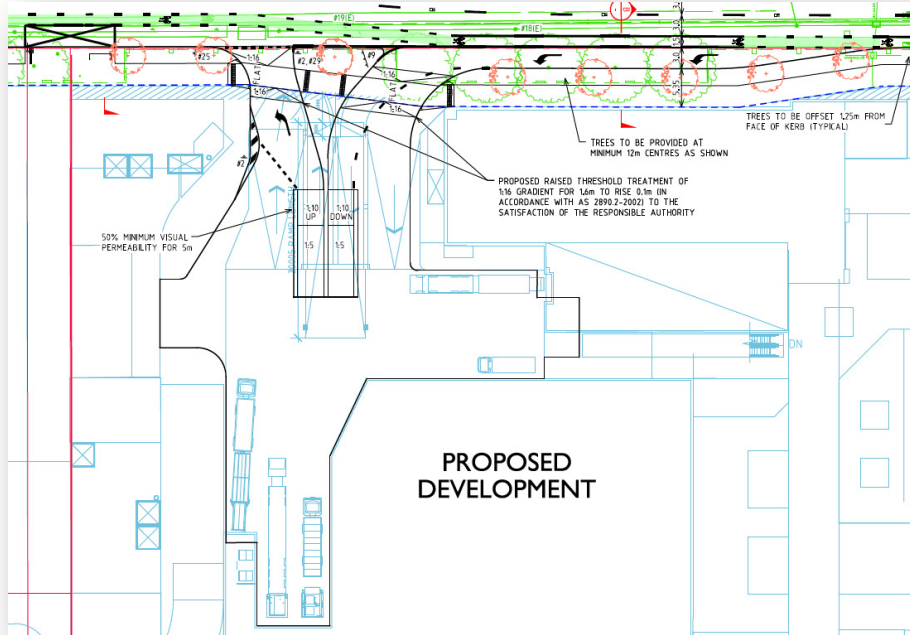
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Appendix B:
Road Safety Audits Pty Ltd –
Previous RSA Report



22 YEARS OF
EXCELLENCE

Road Safety Audit Report



Location: **Heidelberg Road**

Project: **Intersection modification**

Stage: **Functional Design**

Clients: **GTA Consultants**

Report Issue Date: 25/07/2017



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PRACTICAL

INDEPENDENT

Road Safety Audit Report

Heidelberg Road
GTA Consultants

RSA Reference: RSA-05937

Document Record

Issue	Delivered	Senior Auditors	Primary Contact	Notes
A	25/07/2017	Bob Cumming Peter Harris	Bob Cumming	Nil



Road Safety Audits
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INTRODUCTION

This is a road safety audit of the proposed modifications to the previously approved left-in / left-out intersection on the south side of Heidelberg Road between Latrobe Avenue and Chandler Highway. It is undertaken by Road Safety Audits P/L, commissioned by GTA Consultants. It has been carried out in accordance with "Austroads Guide to Road Safety, Part 6: Road Safety Audit 2009" guidelines.

ROAD SAFETY AUDIT: OVERVIEW

A road safety audit is an independent examination of a design or condition to evaluate potential safety issues for all road user types. It is typically done by a team of suitably qualified people and often provides suggestions for consideration by the designer / client / project team.

A road safety audit is fundamentally a subjective qualitative process highly influenced by the experience and views of the individual team members. RSA P/L's quality assurance process utilises customised checklists designed for niche areas in traffic engineering/road design (e.g. channelized intersections, signalised intersections, safety barriers), in conjunction with a four-layer audit process: 1. on-site evaluation; 2. media and data capture and review; 3. specialist auditor input; and 4. secondary blinded reviews.

The purpose of a road safety audit is to raise potential safety issues, not to check compliance with guidelines and standards.

ROAD SAFETY AUDIT TEAM

The road safety audit was carried out by Bob Cumming, Chris Keramidas and Peter Harris. Bob Cumming, Chris Keramidas and Peter Harris carry out road safety audits full-time in various states of Australia and have extensive experience in all stages of road safety audits leading or participating in several hundred audits and risk assessments every year.

Road Safety Audits Pty Ltd is accredited for the conduct of road safety audits under VicRoads' professional services register. Bob Cumming and Peter Harris are accredited Senior Road Safety Auditors under VicRoads pre-qualified senior road safety audit scheme.

CONDUCT OF THE SITE INSPECTION

A site visit was carried out as part of previous road safety audits here by RSA P/L and the subject area is well known to the audit team.

The scope of the audit is limited to the new proposed intersection and does not encompass turning from the access road to and from the car park proper or the layout of the loading bay.

DESCRIPTION

RSA P/L previously undertook a road safety audit of a different design for this intersection as shown in Figure 1 (RSA-04482 dated 07/06/2016).

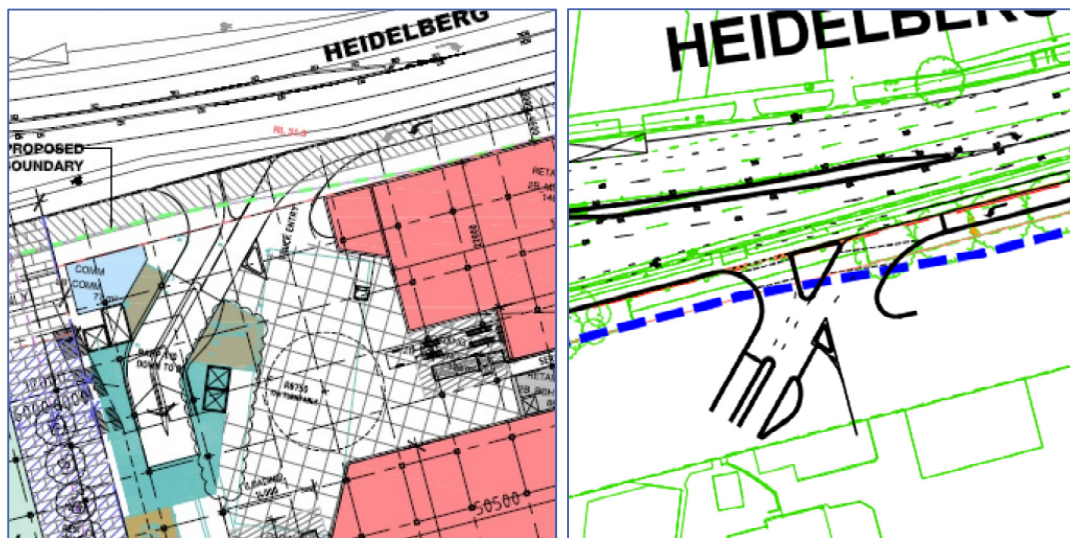


Figure 1: Previous design from 2016

Since that time there have been a number of amendments that have occurred to this frontage, summarised as follows:

- The removal of the proposed pedestrian operated signals at this access due to an amended internal function that does not require loading trucks to cross the entry path for the public vehicles that the access. The design now requires trucks to circulate around the public access ramp, which has been set back from the Heidelberg Road as far as practical.
- The inclusion of trees along the Heidelberg Road frontage, noting that the updated VicRoads tree planting policy avoids the need for the use of barrier systems.
- VicRoads have granted in-principle approval to the functional layout and streetscape design comprising trees at 12m centres.

The revised plan is shown in Figure 2.

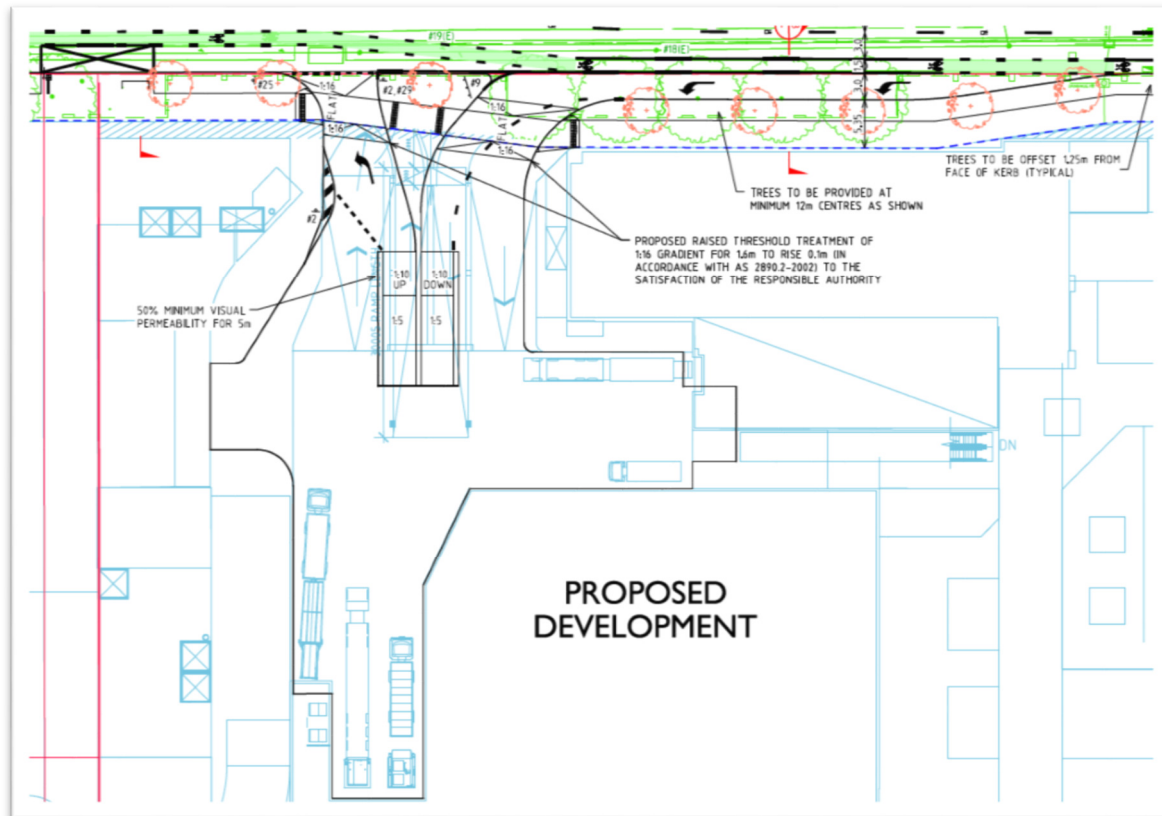


Figure 2: Design which is the subject of this audit

The layout will function somewhat similarly (in principle) to the arrangement for Westfield Doncaster at the Doncaster Road/Frederick Street (Figure 3).

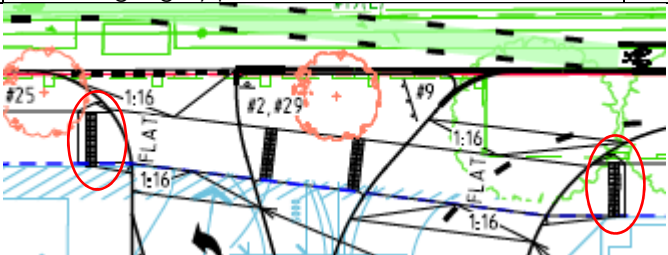
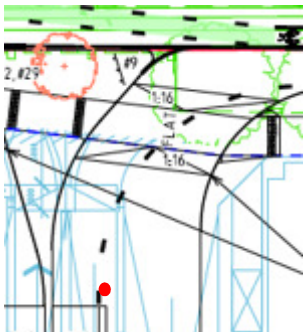


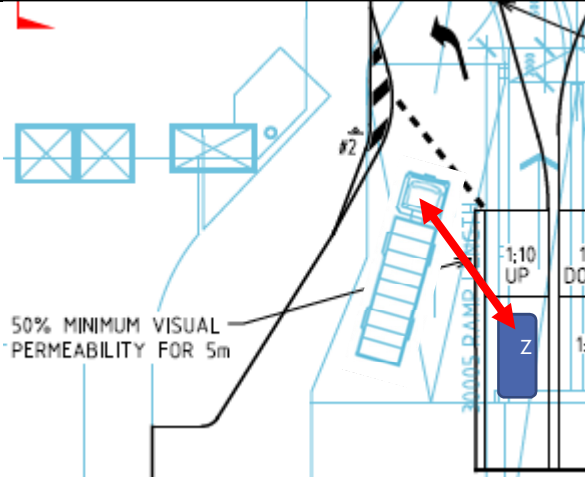
Figure 3: Westfield Doncaster - Doncaster Road/Frederick Street public car park / loading dock entry

The left-in left-out intersection will not be signalised and will incorporate raised threshold treatments with a level grade for shared path users and 1:16 ramps for road traffic.

ISSUES TABLE

Point No.	Issue	Suggestion	Response	
			Accept / Reject	Comment / Status
1.	Navigation It is understood that the loading area will be distinguished from the car park access road with signs and line-marking. If drivers may be confused here there is potential for sudden stops and rear-end crashes. The Westfield Doncaster example shown in Figure 3 could be easily misunderstood due for faded pavement markings and gantry signage for the carpark only.	Ensure the loading bay area is clearly distinguished from the road – preferably by a different colour paving. Status: Compliance / NA / Urgent / Important / Minor	Accept	It is expected that different coloured paving will be provided to differentiate the public car park to the loading area. It should be noted that the public ramp has been sufficiently set back from Heidelberg Road to allow motorists time to enter the car park. Additionally, signage will clearly identify the entrance to the car park, with the loading area to be gated (both entry and exit) for loading vehicles only.
2.	Cyclists With the level shared path threshold treatments, a concern is raised about the potential for cyclists on the shared path to approach at speeds higher than drivers expect or can easily give way to. Note: Based on Victorian Road Rules, SUP users have the right of way over entering vehicles (side road or driveway), and sometimes over exiting vehicles (driveway but not side road).	<ul style="list-style-type: none"> Check sight distance (including ensuring trees chosen will not be bushy below 2m). Investigate measures to slow cyclists and to alert them. As the Road Rules are not well understood on this point, consider actively providing priority to SUP users with signs and markings. Status: Compliance / NA / Urgent / Important / Minor	Reject	Along the site frontage on Heidelberg Road, both an on-road bicycle lane and a shared path are proposed to be provided in accordance with the Development Plan for the overall site. As such, it is expected that competent cyclists (travelling at speed) will choose to utilise the on-road bicycle lane, with less-experienced users expected to utilise the shared path at slower speeds. Notwithstanding the above, the canopy of the street trees are proposed to be greater than 2m to aid sight distance for motorists.

Point No.	Issue	Suggestion	Response	
			Accept / Reject	Comment / Status
3.	TGSIs <ol style="list-style-type: none"> Some of the TGSIs are shown perpendicular to approach paths rather than crossing alignment (red circles). TGSIs can be skidding hazards for cyclists. Some projects get constructed with white TGSIs on light grey paths. 	<ol style="list-style-type: none"> Realign these TGSIs. Specify TGSIs with similar friction characteristics to the surrounding path. Ensure good contrast is provided. 	Accept	The functional layout plan can be updated to include a realignment of the TGSI's.
				
4.	Wall hazard <p>If a wall is present between entering trucks and cars, it would be a roadside hazard (although speeds will be low).</p>	Consider incorporating a shock absorbing bollard as shown.	Accept	The functional layout plan can be updated to include the bollard as suggested.
				

Point No.	Issue	Suggestion	Response	
			Accept / Reject	Comment / Status
5.	Sightlines between vehicles approaching Heidelberg Rd The wall between trucks and cars will obstruct sightlines between drivers of vehicles with conflicting movements. While a give way line is shown, truck drivers can only give way if they can see the vehicles they have to give way to.	50% visual permeability is specified. Ensure this visual permeability is relevant to the angles of viewing required.	Accept	The wall between trucks and cars will be 50% permeable for exiting cars/trucks at this location.
				
6.	Swept paths Swept path drawings were not provided.	Ensure swept path checks are undertaken for all expected vehicles.	Accept	Swept paths for all relevant design vehicles in this area have been undertaken.

CONCLUDING STATEMENT

The audit has attempted to balance the safety needs of all road users within the site/design constraints. As per Austroads guidelines, the suggestions provided have attempted to be realistic/feasible and commensurate with the actual risk posed. Although it attempts to raise all potential safety risks, this is generally not practicable due to a limited knowledge of the site and the design. Agreement to the issues and/or suggestions does not necessarily eliminate risk.

A road safety audit is fundamentally a subjective qualitative process highly influenced by the experience and views of the individual team members. It is expected that the project team has competence to incorporate any audit findings into the broader design-risk decision process and to ask the audit team further questions where necessary.

Peter Harris



25/07/2017

Senior Road Safety Auditor
CPEng, RPEQ, NER, BE (Civil), BB (Bus. Admin)

Bob Cumming



25/07/2017

Senior Road Safety Auditor
BE (Civil)

RESPONDING TO THE ROAD SAFETY AUDIT

Although the client receiving the report does not have to agree to the audit findings/suggestions, the issues and associated risks should be carefully considered. A written response should be made to all of the audit findings raised, then signed off by the responsible person from the project team.

RSA P/L does not change the audit findings or sign off on the project's responses. However, if a finalisation meeting has not been commissioned by the client, the client is **encouraged to provide the responses to RSA P/L to check that each audit point has been fully understood**. Also, the responses can be used by RSA P/L for their knowledge and possible use on future audits for this project.

REFERENCES

Relevant guidelines, standards, laws, and policy documents

Road Safety Audit

- Austroads Guide to Road Safety – Road Safety Audit - 2009

Traffic Engineering

- Austroads Guide to Road Design (AGRD)
- Austroads Guide to Traffic Management (AGTM)
- AS 1742 Manual of Uniform Traffic Control Devices, including:
 - Part 1 General Introduction and Index of Signs
 - Part 2 Traffic Control Devices for General Use
- VicRoads Supplement to Austroads Guides and AS1742

Pedestrian Facilities

- VicRoads TEM1 Ch.4 Pedestrian Facilities
- AS 1742.10 Manual of Uniform Traffic Control Devices - Part 10 Pedestrian Control and Protection
- Austroads AGRD Part 6A Pedestrian and Cyclist Paths

Parking

- VicRoads TEM1 Ch.9 Parking
- AS/NZS 2890 Parking Facilities
- AS 1742.11 Manual of Uniform Traffic Control Devices - Part 11 Parking Controls